

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

MICROSOFT CORPORATION,
Plaintiff,

v.

ALCATEL-LUCENT ENTERPRISE
and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.,
Defendants.

C.A. No. 07-090-SLR

PUBLIC VERSION

**DECLARATION OF WILLIAM H. BECKMANN, PH.D., IN SUPPORT OF
MICROSOFT'S OPPOSITION TO DEFENDANTS' MOTION FOR
SUMMARY JUDGMENT OF NONINFRINGEMENT AND INVALIDITY
FOR ALL ASSERTED CLAIMS OF U.S. PATENT NOS. 6,263,064 AND 6,728,357**

I, William H. Beckmann, Ph.D., declare:

1. I, William H. Beckmann, Ph.D., have been retained by counsel for Microsoft Corporation ("Microsoft") to analyze and investigate certain issues relating to U.S. Patent Nos. 6,234,064 ("the '064 patent"), 6,278,357 ("the '357 patent"), 6,421,439, and 6,430,289 asserted by Microsoft against Defendants Alcatel-Lucent Enterprise ("ALE") and Genesys Telecommunications, Inc. ("Genesys"). I have personal knowledge of the matters stated in this declaration and would testify truthfully to them if called upon to do so.
2. I have nearly thirty years of experience in the telecommunications field, including unified communication systems and computer telephony. Between 1995 and 1999, for example, I served as a Vice President at IBM Corporation responsible for broadband digital solutions and digital video systems and headed the team responsible for IBM's corporate strategy for digital broadband. Between 1984 and 1989, I served as a manager at Bell Communications Research responsible for integrating ISDN and Advanced Intelligent Networks and for the design of

multimedia network systems. Between 1980 and 1984, I served as a manager and lead systems engineer at Bell Laboratories, where I created and managed a group responsible for systems integration of packet-switched data networks with voice networks and also designed and developed fast packet switching systems for voice and data traffic. During that time, I also served as an adjunct professor of Telecommunications Engineering at Rensselaer Polytechnic Institute. I received a bachelor's degree in Mathematics from Davidson College in 1972, a master's degree in mathematics from Cornell University in 1974, and a Ph.D. in mathematics from Cornell University in 1980. Additional information regarding my technical background is included in my resume, which is attached hereto as Exhibit 1.

3. I understand that the first step in determining whether a patent claim is infringed is determining how the terms of the asserted claims should be construed. While the Court has not yet construed the terms at issue here, I understand that the parties have an ongoing dialogue on claim construction, have exchanged initial proposed constructions, and have provided opening briefs on claim construction to the Court. I further understand that the claims are to be interpreted from the perspective of a person of ordinary skill in the time of the invention. In that regard, I understand that I may provide relevant background information to assist the Court in understanding the technology at issue and in construing the asserted claims from the perspective of a person of ordinary skill in the relevant art.

4. In assessing infringement, I understand that literal infringement of a patent claim requires that each limitation of the claim is present in the accused product. I also understand that indirect infringement of a patent claim requires that the indirect infringer have contributed to or induced another to directly infringe a patent claim.

5. It is my understanding that a patent claim is presumed valid. I understand that a patent claim can be rendered invalid only by clear and convincing evidence. It is my understanding that a patent claim is invalid as anticipated when a single prior art reference discloses each and every limitation of that claim, as properly construed. In addition, I understand that the prior art reference must enable one of ordinary skill in the art to practice the claim without undue experimentation.

6. I have reviewed the '064 patent, the '357 patent, and the accused OXE System.

7. I have also reviewed Defendants' Motion for Summary Judgment of Noninfringement and Invalidity for all Asserted Claims of U.S. Patent Nos. 6,263,064 and 6,728,357 and the Declaration of Henry Hyde-Thomson in Support of Defendants' Motions for Summary Judgment of Noninfringement and Invalidity for all Asserted Claims of United States Patent Nos.

6,623,064, 6,728,357, 6,640,289, and 6,421,439 and all documents and exhibits cited therein.

8. Additionally, I have reviewed all documents cited in this declaration and as well as each of the documents attached to the Declaration of Raymond Scott.

9. Further, I incorporate herein by reference my two expert reports: (i) Expert Report Of William H. Beckmann, Ph.D.; and ii) Second Expert Report Of William H. Beckmann, Ph.D, including the exhibits attached thereto. True and correct copies of the reports are attached as exhibits to the Scott Declaration. Incorporated herein by reference, and attached hereto as Exhibit 2 for ease of reference, are infringement charts detailing my opinions regarding infringement of the O'Neal patents by the OXE system.

10. It is my opinion that the accused OmniPCX Enterprise system ("the OXE system") infringes claims asserted claims 1, 3, 8, 9, 11 and 20 of the '064 patent and asserted claims 1, 6 and 17 of the '357 patent.

11. It is also my opinion that none of the asserted claims of the O'Neal patents is anticipated either by U.S. Patent No. 6,445,694 ("Swartz") or U.S. Patent No. 6,636,587 ("Nagai").

A. The Asserted O'Neal Patents

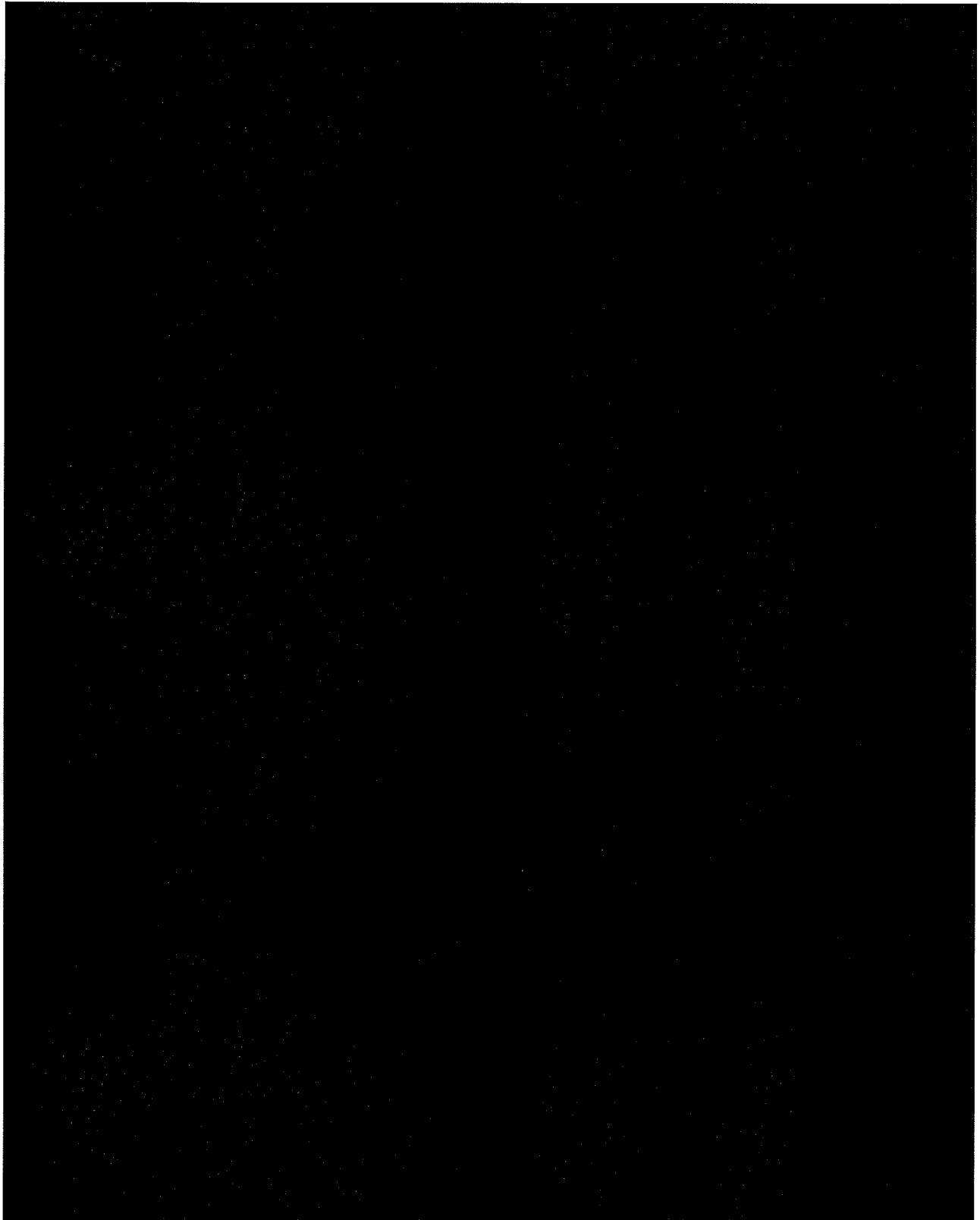
12. The O'Neal Patents are directed to a computer implemented control center and a method for permitting a subscriber of a plurality of communication services of a unified messaging system to customize communication options pertaining to the plurality of communication services. ['064 patent, Abstract, 4:7-11.] The subscriber can customize these options through either a telephony-centric network using a telephone, or a through a data-centric network using a display terminal. [Id.] The system stores subscriber communication options in a subscriber communication profile database. [Id.] A computer server and a telephony server are both coupled to the subscriber communication profile database and respectively provide a graphical user interface ("GUI") and a telephone user interface ("TUI") to allow a user to review and change communication options using either a display terminal or a telephone. [Id.]

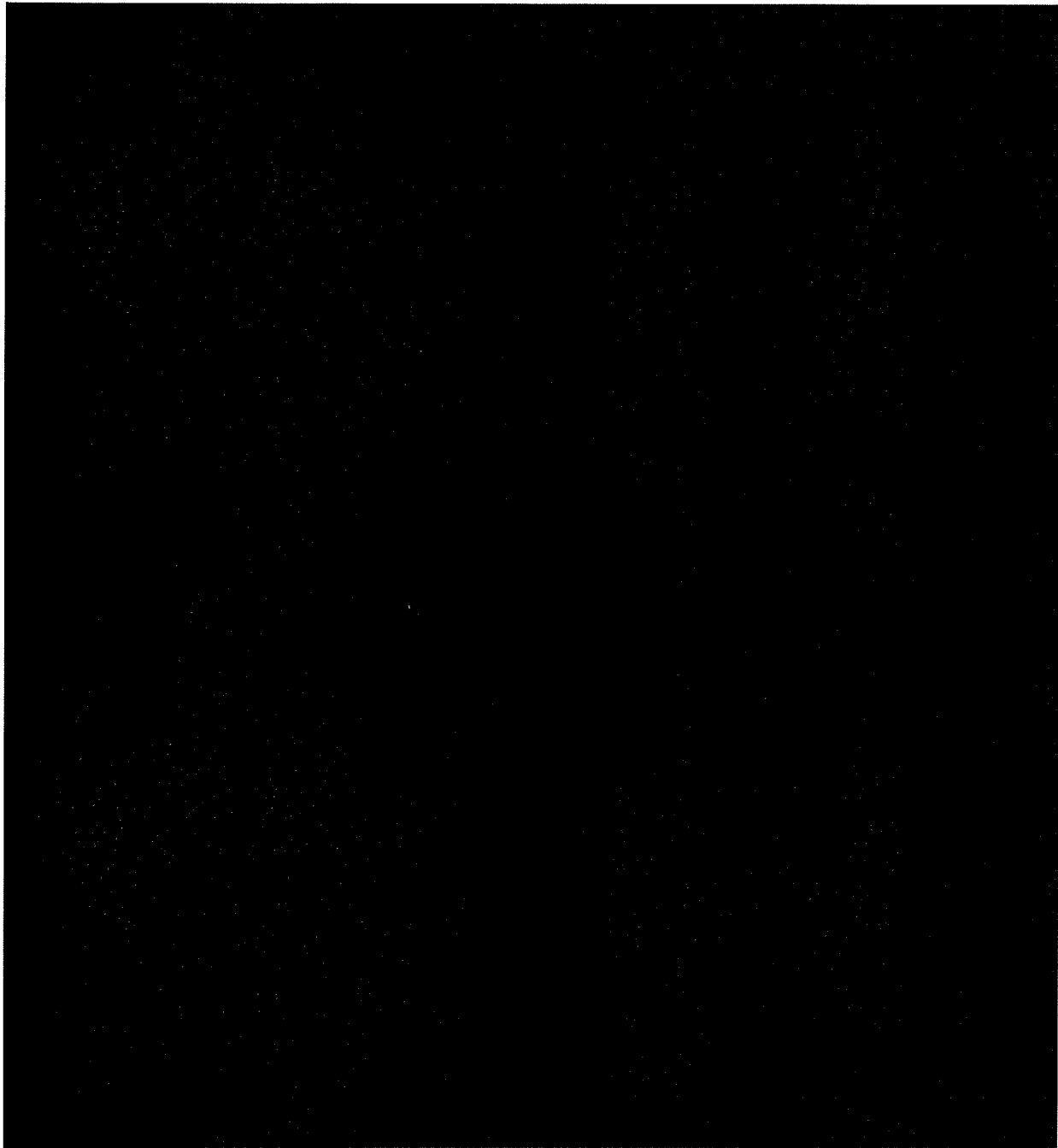
13. Microsoft is asserting claims 1, 3, 8, 9, 11 and 20 of the '064 patent. Asserted claims 3, 8, 9, and 11 depend from claim 1. Microsoft is also asserting claims 1, 6 and 17 of the '357 patent, which depend from claim 1 of the '357 patent. All of the asserted claims include the same or similar limitations regarding the unified messaging system, GUI and TUI that are at issue in ALE's motion for summary judgment.

B. The Accused Alcatel System

1. Overview and Components of the OXE System

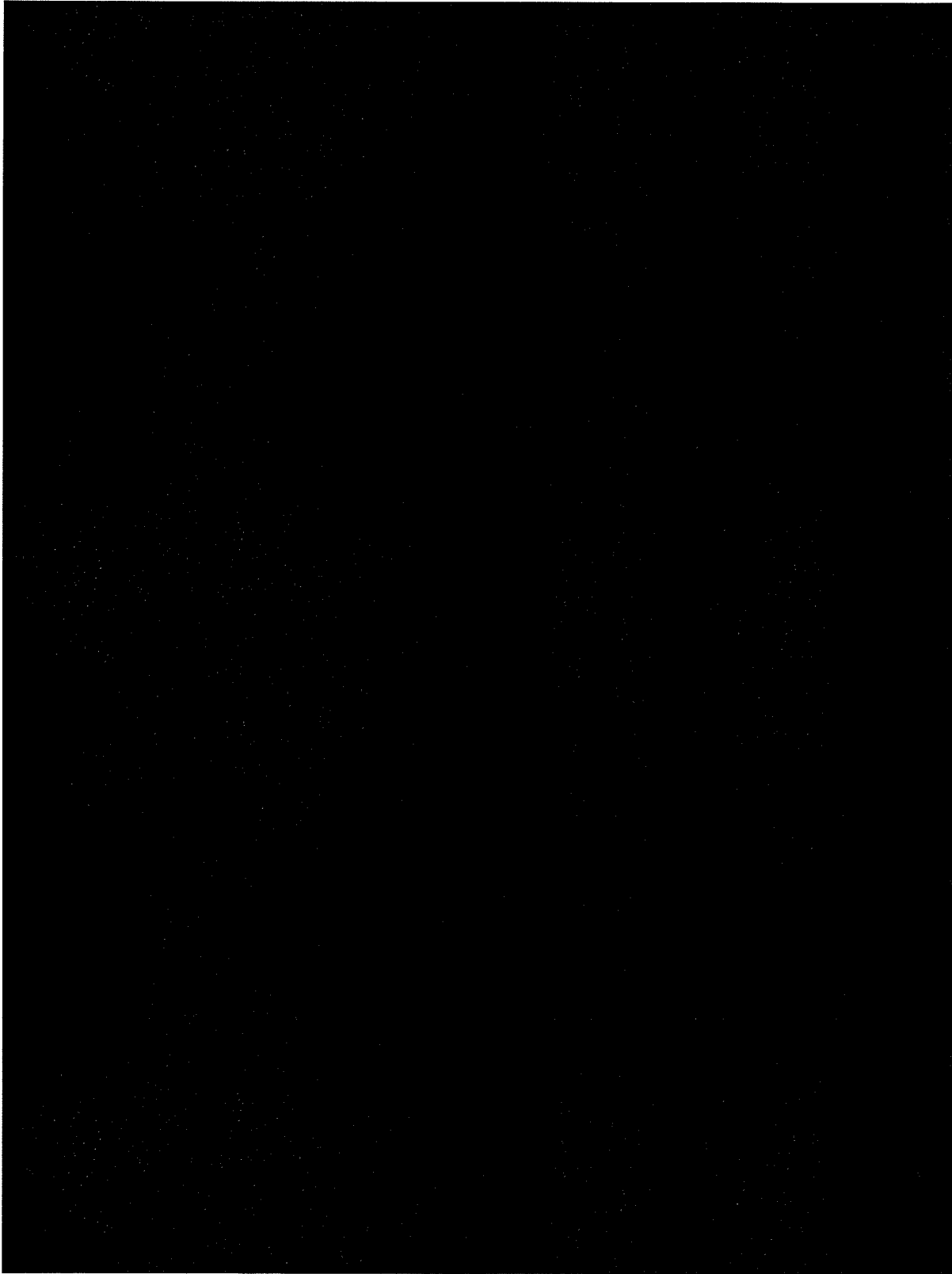


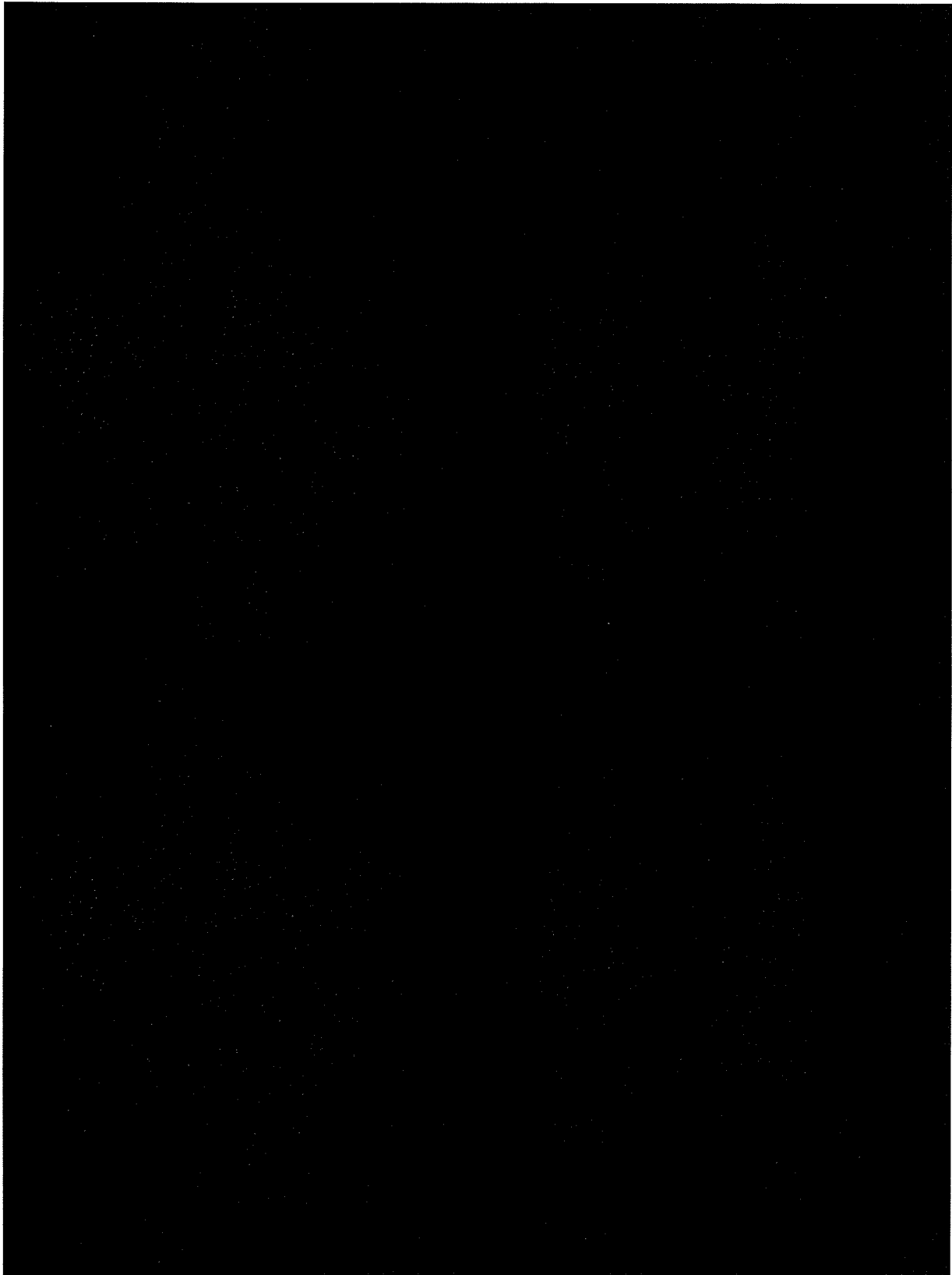


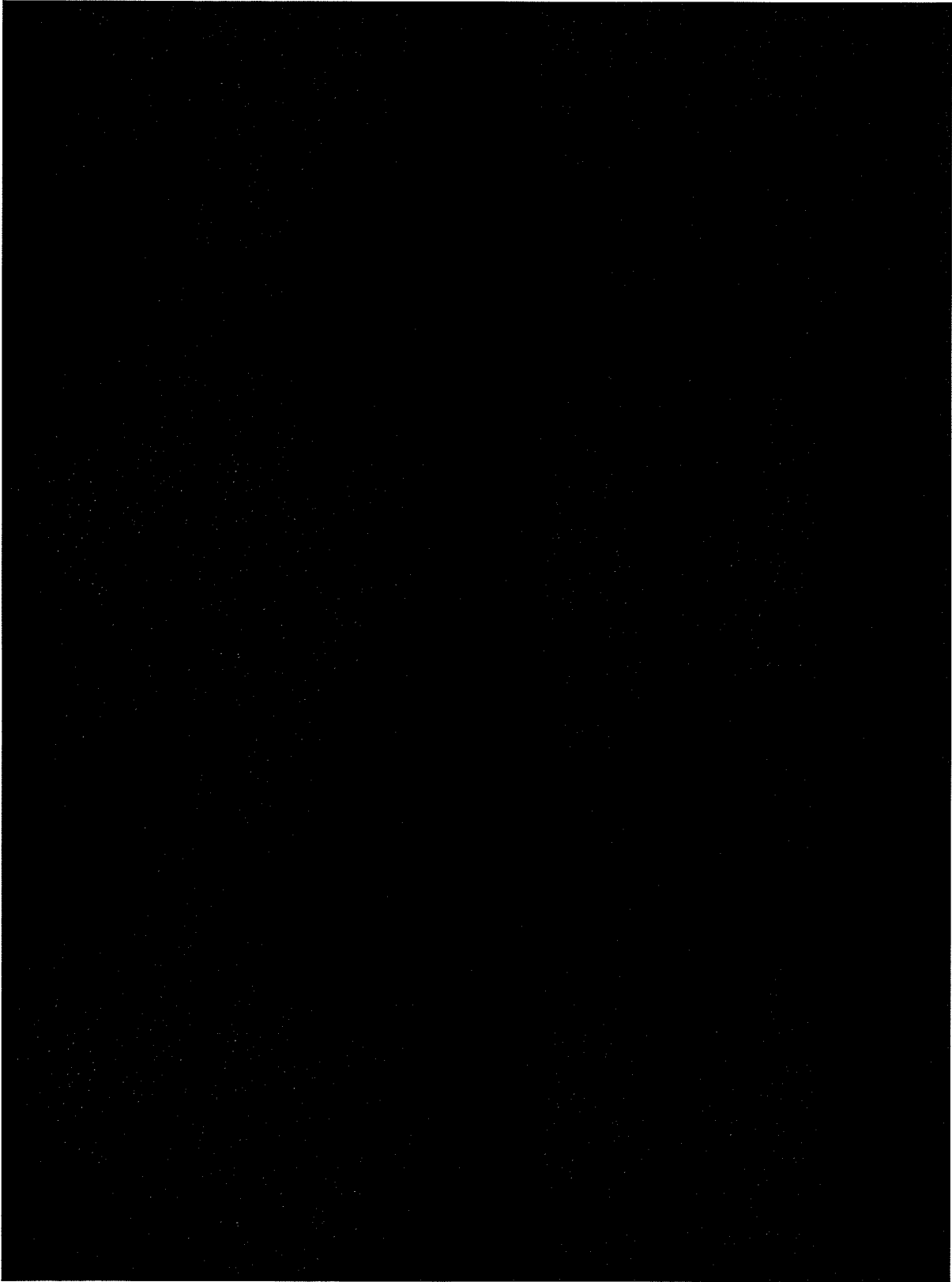


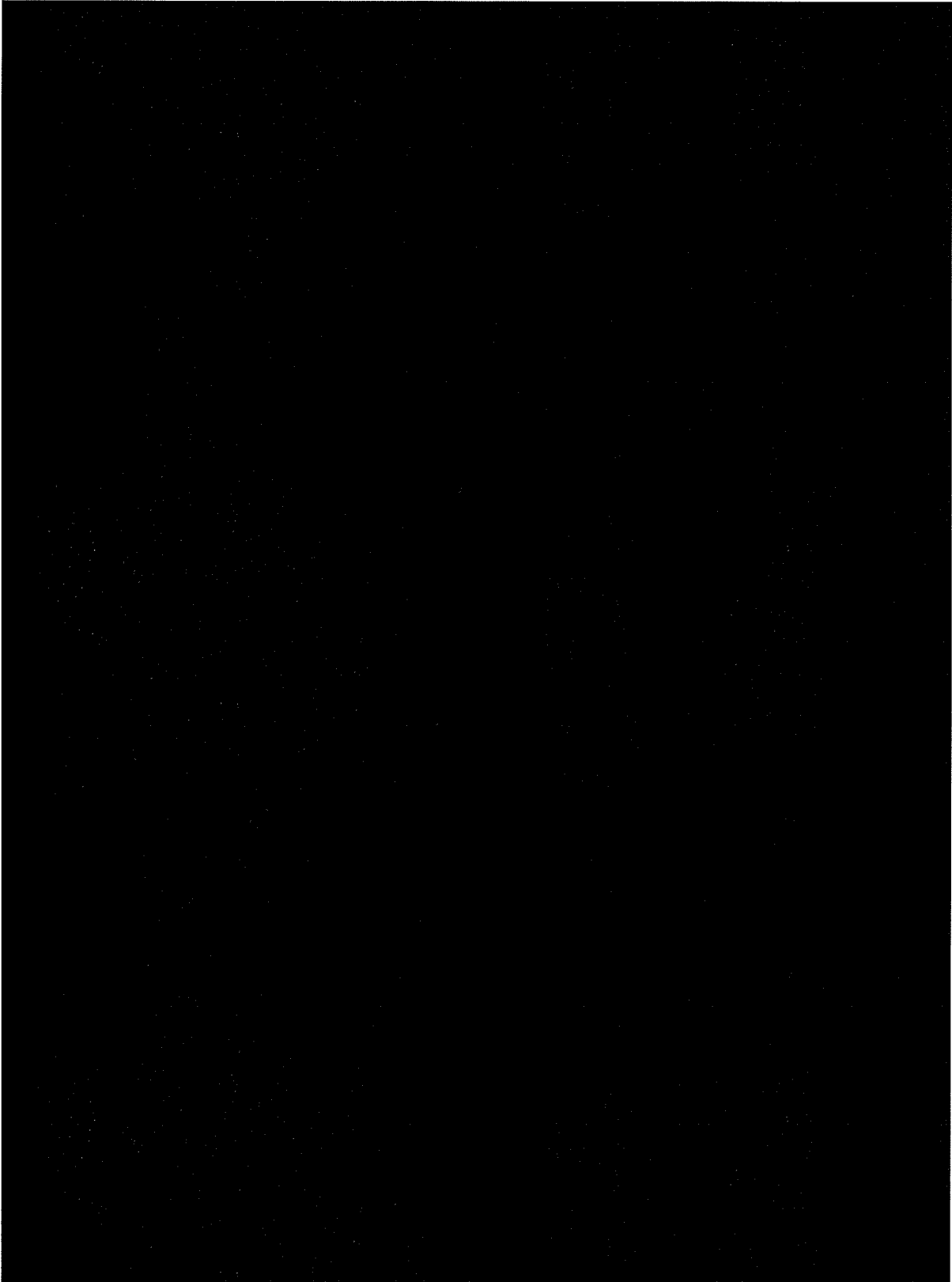
2. Architecture and Features of the OXE System

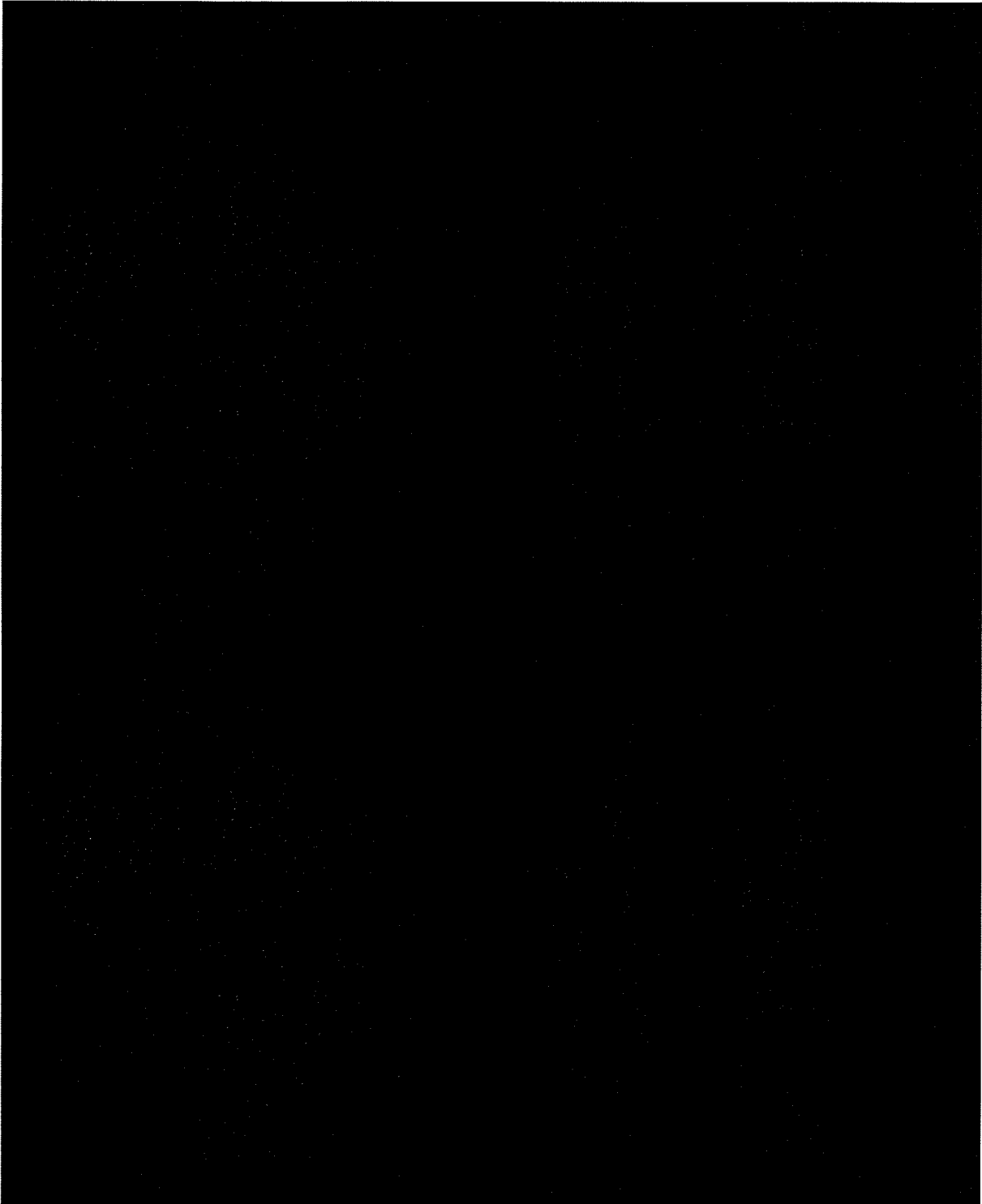
19. I have reviewed and analyzed a representative demonstration system (shown in Figure 1, below) that was designed and configured as described and instructed according to product literature ALE provides to its customers and resellers in the United States. [See, e.g.,

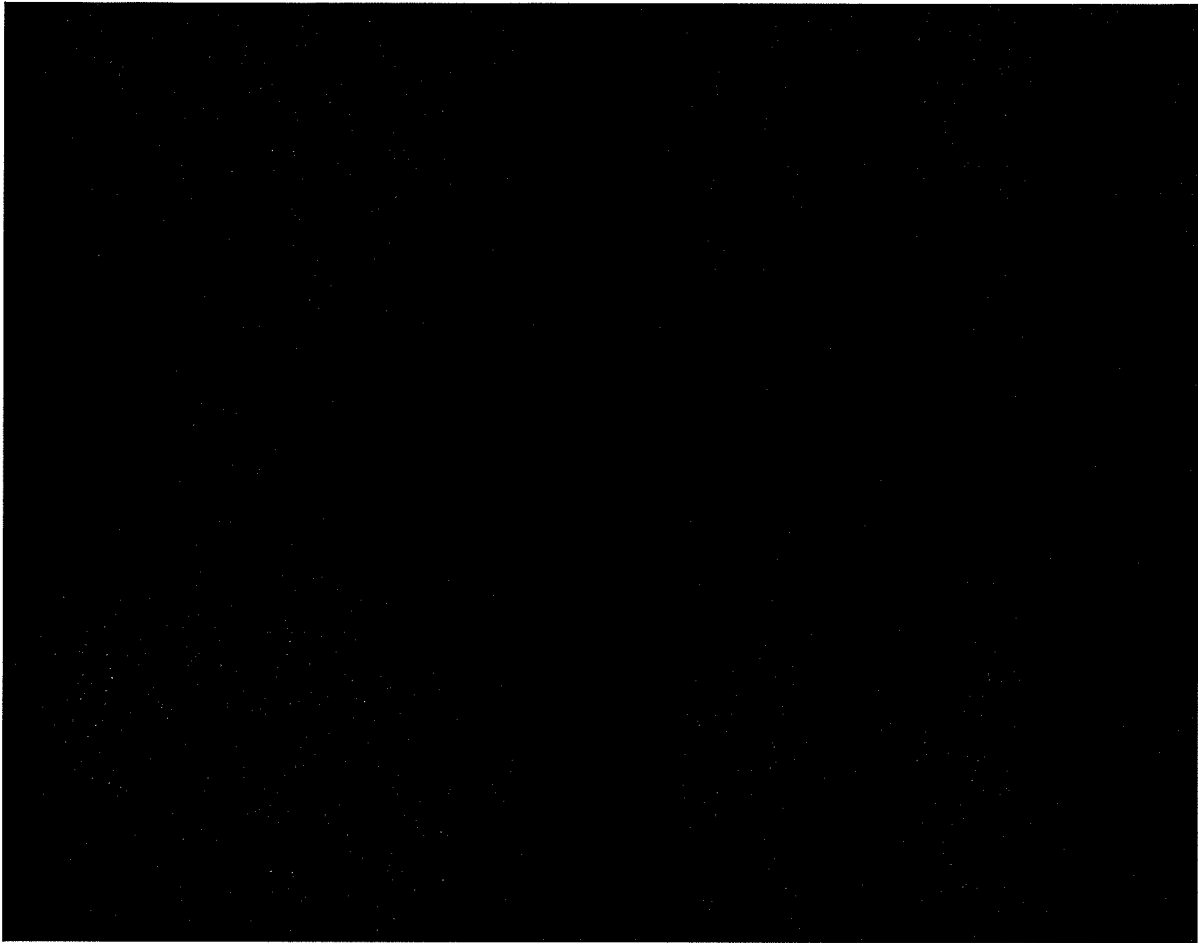




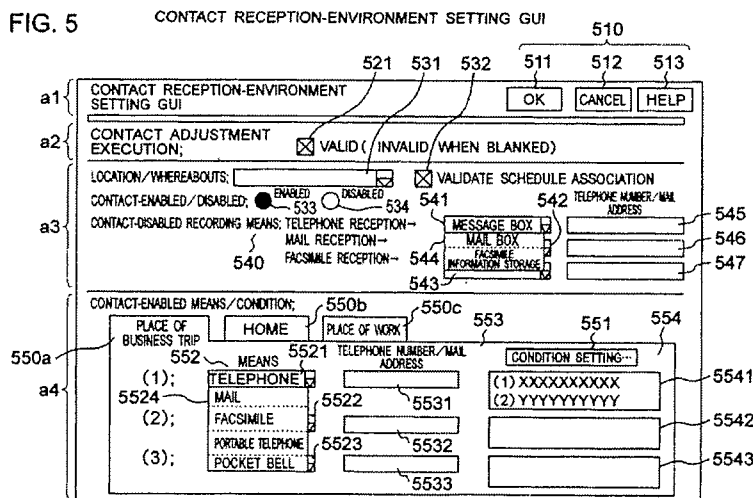








31. When a user opens a drop down menu, the drop-down reveals options that were previously hidden and that can be selected by the user. Figure 5 of the Nagai patent (ABS00869010) shows an example of a typical menu in which a drop down menu (item 5524) has been opened. The drop down menu reveals various options but also overlaps and hides other displayed options (items 5522 and 5523) in the main menu.



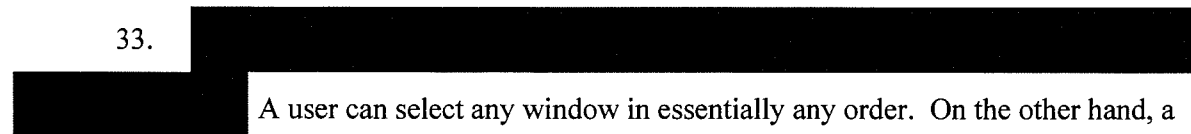
[Figure 5, Nagai Patent (ABS00869005-047) at ABS00869010.]



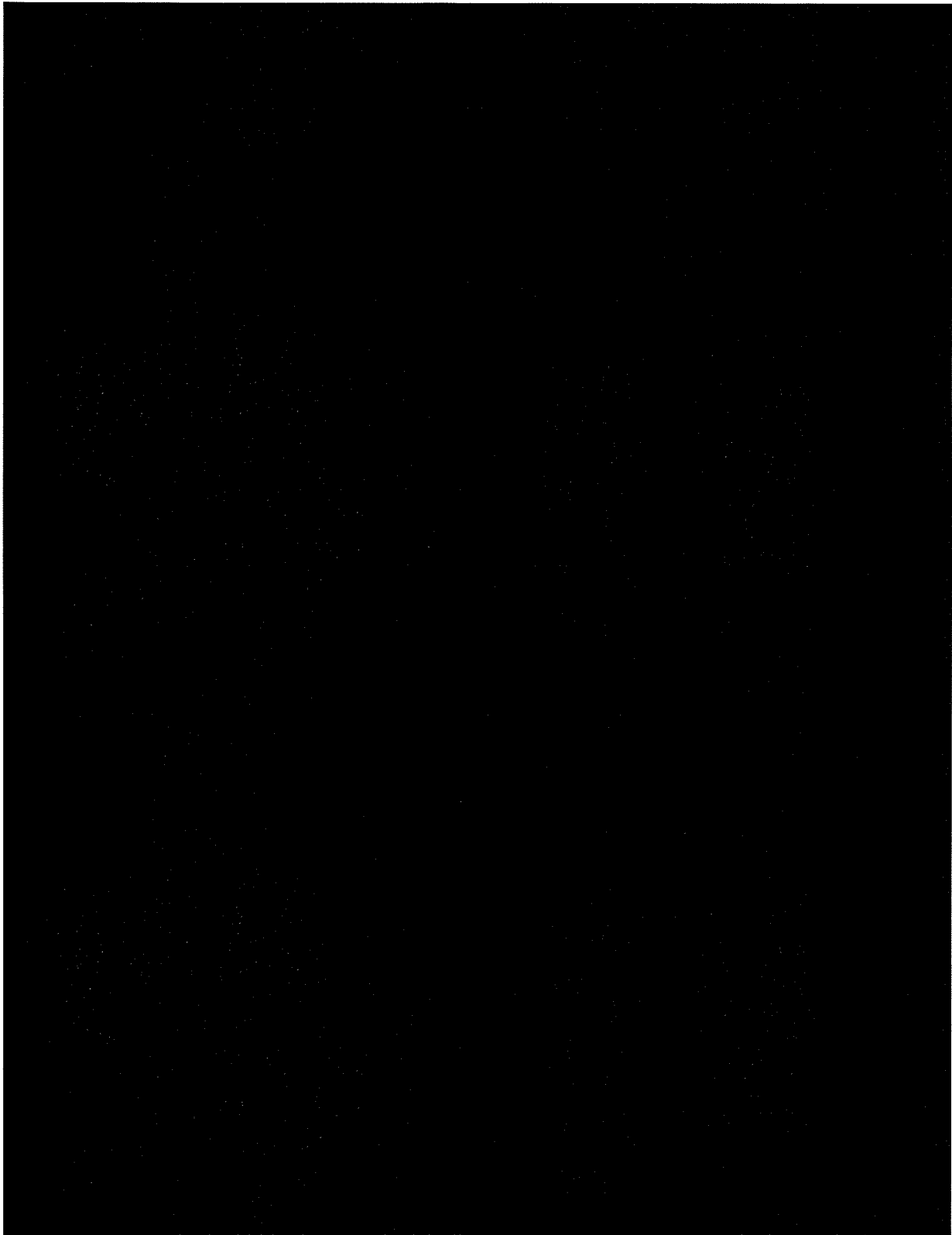
To the extent that a

drop-down menu is part of a single graphical menu from which it is accessed, multiple windows displayed at the same time can also be part of the same single graphical menu. For example, both overlapping windows and drop-down menus can reveal the options they contain with a few clicks. Just like multiple simultaneously displayed windows, a drop down menu may overlap and obscure options in a larger menu, and any option that is hidden.

33.

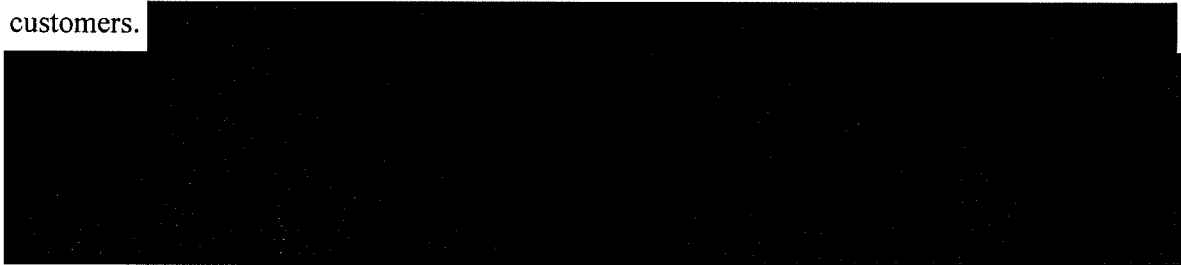


A user can select any window in essentially any order. On the other hand, a drop down menu, which Mr. Hyde-Thomson believes is part of the main menu from which it is accessed, is by its very nature hierarchical because the drop-down menu can only be selected






36. It is also my opinion that ALE indirectly infringes the asserted claims of the O'Neal patents by inducing or contributing to the infringement to the infringement by its customers.

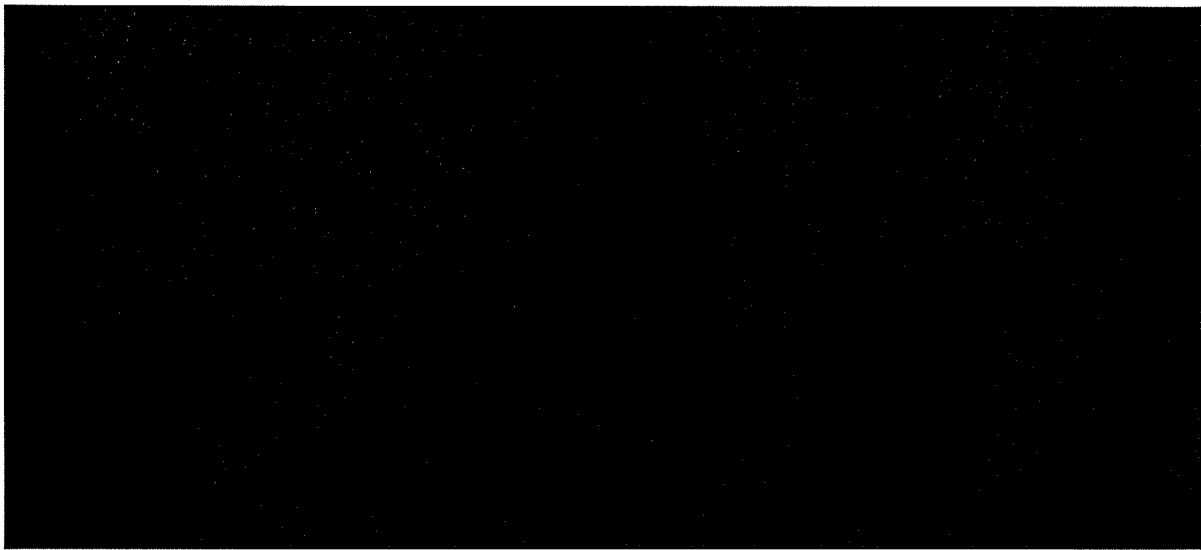


37. It is my opinion that ALE has contributed to and induced the infringement by others of the Microsoft Patents.





39. It is my opinion that, given the special functionalities and adaptation of the OXE and given ALE's representation about its product, the OXE system is not a staple article. It is also my opinion the OXE system, including the OTUC applications, has no substantial non-infringing use.



C. The Prior Art

1. The Swartz Patent

41. The Swartz patent describes an internet controlled Telephone System that handles incoming calls and establishes outgoing telephone connections in accordance with the preference data provided by the subscriber. [See, e.g., Swartz, Abstract, 1:12–15.] In other words, the Swartz system is a telephone and voicemail system with limited functionalities related to email and other communications, that does not anticipate the asserted claims of the '064 patent. [Id.]

42. The Swartz system “operates as a POP mailbox and SMTP server for receiving and sending email respectively.” [See Swartz, 12:20–31.] There is no disclosure of any additional software used with the Swartz POP server that would be needed to coordinate

messaging. It is my opinion that the Swartz patent does not anticipate any asserted claims of the O'Neal patents because the patent does not disclose a system that receives, stores, retrieves and forwards messages in a coordinated manner.

2. The Nagai Patent

43. The Nagai patent relates to a computer-telephony integration ("CTI") system and an information reception processing method in which information (e.g., multimedia information with voice, text and image) sent from a device such as a computer, a cell phone or a facsimile machine can be automatically converted and transmitted to a similar or different device at a connection destination. [See Nagai fig.1.]

44. As shown in Figure 2 of the Nagai patent, the disclosed system includes a CTI server connected to a telephone network via a PBX and to various other servers, including a groupware server labeled as a "unified messaging system." The Nagai system is connected to the internet via an internet server. [See Nagai, figure 2.] The system receives e-mail messages directed to system subscribers at the groupware server via the internet server. A groupware control program running on the CTI server detects that a message has been received and loads the received message from the groupware server onto the CTI server. [Nagai, 19:16–26, 21:16–22.] The CTI server reformats the message if necessary, then finally routes the message to the intended subscriber's device. As noted in the Nagai patent's abstract, the Nagai system only temporarily stores messages to process and route them to destination devices. [Nagai, Abstract.]

45. Nagai explains that the groupware server does not perform the conversions required to send messages to "communication devices or networks employed for the transmission of messages" as required by Microsoft's and by ALE's construction. That task is performed by Nagai's CTI server. [See, e.g., Nagai col.8 l.39–col.9 l.36, col.21 ll.9–64.] The Nagai system formats and routes messages from a source to a destination, but it does not

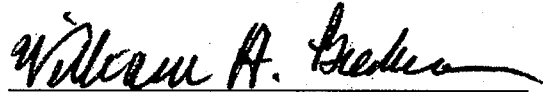
coordinate retrieval and forwarding of messages as required of unified messaging systems. In my opinion, the Nagai patent does not anticipate because it does not disclose the claimed unified messaging system.

46. Nagai does not describe a “system that allows messages of a data-centric network and a telephony-centric network to be received, stored, retrieved, and forwarded without regard to the communication devices or networks employed for the transmission of the messages (i.e., in a coordinated manner),” as Microsoft proposes the term unified messaging system should be construed. In my opinion, the Nagai system formats and routes messages from a source to a destination, but it does not coordinate retrieval and forwarding of messages as required of unified messaging systems.

47. Nagai fails to disclose the limitations of claim 8 of the '064 patent. Mr. Hyde-Thomson has not identified in Nagai a “first communication option [which] includes a first routing option” and a “second communication option [which] includes a second routing option” as called for by claim 8. In my opinion the Nagai patent at 8:3–6 describes various services that the system offers but does not describe displaying options.

I declare under the penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed this 20th day of June 2008 in Cross River, NY.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "William H. Beckmann", written over a horizontal line.

William H. Beckmann, Ph.D.

CERTIFICATE OF SERVICE

I hereby certify that on June 27, 2008, I electronically filed with the Clerk of Court the attached **PUBLIC VERSION – DECLARATION OF WILLIAM H. BECKMANN, PH.D., IN SUPPORT OF MICROSOFT CORP.’S OPPOSITION TO DEFENDANTS’ MOTION FOR SUMMARY JUDGMENT OF NONINFRINGEMENT AND INVALIDITY FOR ALL ASSERTED CLAIMS OF U.S. PATENT NOS. 6,263,064 AND 6,728,357**, using CM/ECF which will send notification of such filing to the following individuals:

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633 West Fifth Street, Suite 4000
Los Angeles, CA 90071

/s/ Thomas L. Halkowski
Thomas L. Halkowski
halkowski@fr.com

EXHIBIT 1

William H. Beckmann, Ph.D.
Curriculum Vitae

Professional Summary

Dr. Beckmann has almost thirty years of academic and industry experience focused in the fields of communications networks and information technology. He has been responsible for managing and solving business and technical issues in these fields. Dr. Beckmann is an expert in all aspects of broadband network and software technologies and their implementation into advanced communications networks. He has had experience in strategic planning, marketing, business development, technical development, deployment, and management of these technologies and networks.

Expertise

- Advanced Intelligent Networks
- Broadband Communications
- Digital Networking Technologies
- Digital Video Systems
- Distributed Processing Systems
- Network Architecture
- Network Management & Operations
- Software Design & Architecture

Education

<u>Year</u>	<u>College or University</u>	<u>Degree</u>
1980	Cornell University	Ph.D., Mathematics
1974	Cornell University	M.S., Mathematics
1972	Davidson College	B.S., Summa cum Laude, Mathematics

Professional Experience

From: 1999
 To: Present
 Organization: Networking Computing Associates
 Title: President and Co-Founder
 Summary: Network Computing Associates (NCA) is a consulting firm that provides expertise to companies and organizations in making or executing decisions that involve network and information technologies and their integration into the company's business processes. NCA Clientele includes:

William H. Beckmann, Ph.D.
Curriculum Vitae

- Big Think, New York, NY
- Burst.com, San Francisco, CA
- Federal Communications Commission, Washington, DC
- General Electric, Fairfield, CT
- IBM, Somers, NY
- Lucent Technologies, Inc., Murray Hill, NJ
- Sorceron, New York NY
- Zoologic, New York, NY

From: 1995

To: 1999

Organization: IBM Corporation

Title: Vice President

Summary: Dr. Beckmann was responsible for broadband digital solutions and marketing, sales, deployment and development of digital video systems. In 1997, he headed the team that constructed the IBM corporate strategy for digital broadband. Accomplishments include:

- Took a digital video development level project into a global sales & distribution project known as Video Enabled Solutions (VES), with sales teams and support groups throughout the world. VES tied together teams in IBM Global Services, IBM's Systems Integration Division with the IBM Telecommunications & Media sales division. This project included development and sales of the IBM Media Streamer, a Unix-based server that could concurrently stream hundreds of digital broadband channels over cable or DSL transmission systems; and implementation and deployment of this server into a full digital network infrastructure, including operational and management support systems and integration of those systems with other similar systems that the customer may have already installed. Total new revenues for IBM from 1996 to 1998 exceeded \$120M.
- The Digital Broadband Strategy, presented to IBM's Chief Technology Council in 1997, addressed how every one of IBM's product, sales, and development groups should approach and assess arising broadband opportunities, and what those opportunities were likely to be. The strategy proposed what alliances IBM should seek and what new lines of business IBM should consider pursuing. The strategy covered all of IBM's technologies, from microelectronics through servers, software, and database and storage systems.

William H. Beckmann, Ph.D.
Curriculum Vitae

From: 1989
To: 1995
Organization: Ameritech
Title: Manager and Director in Corporate Strategy
Summary: Dr. Beckmann had responsibilities in development and deployment of advanced information technologies and multimedia systems. He was the lead in corporate strategy for the merger of five information, accounting, and billing systems of Ameritech's Bell Operating Companies into a single networked system. This effort consolidated Ameritech's various databases, CSR systems, and billing system that were spread out over the five Bell Operating Companies that comprised Ameritech, into a single comprehensive, integrated system. This involved geographical consolidation as well as software & IT consolidation for systems that were mission-critical and 24/7.

To achieve this required:

- Creation of a hot standby system that fully duplicated the data in the existing system in real time.
- Implementation of a high-speed network architecture linking the dispersed systems: the geographical consolidation was initially virtual- enabled by this high-speed networking. This network also fed the standby system.
- Development of an intermediate layer of software that allowed the legacy system software to run as always and permitted insertion of a new interface software layer that made CSR and other agent system interactions consistent and uniform throughout the RBOC service area. This software layer was object-oriented and represented the largest OO software deployment in the country at that time (1989/1990).

As an enhancement to its voice and data transport services, Ameritech considered moving into application transport services that required higher bandwidth: these applications were multimedia in nature. In particular, Ameritech was interested in services that could successfully compete with cable services. This required identification of potential sources of these services: broadcast services, such as those carried by cable, were not legally permitted for the RBOCs. To identify and attract such sources as well as to specify the requirements for the digital content, from a source perspective as well as from a consumer perspective, necessitated execution of the following technical program:

- Analysis of network transmission capabilities applied to actual subscriber loop data (1991 - 1992)
- Mapping of MPEG requirements to ADSL-based and SONET-based benchmarks (1990 - 1992)
- Design of network management systems for support and management of

William H. Beckmann, Ph.D.
Curriculum Vitae

broadband services

- Trial and Comparison of Fiber-to-the-Home and ADSL delivery of Video-on-Demand and Interactive Video Applications (Geneva Lakes WI, 1992)

From: 1984
To: 1989
Organization: Bell Communications Research (Bellcore)
Title: Manager
Summary: Dr. Beckmann was responsible for integration architectures of ISDN and Advanced Intelligent Networks (AIN) and for design of multimedia network systems (including broadband networks). This work encompassed technology, service, and business issues. Special areas of focus included: (1) remote management, operations, and programming of network nodes (switches, digital cross-connect systems, and data base management systems), software languages and interfaces for such remote systems, and uniform operational and management interfaces to multi-vendor environments; and (2) assessment and, where appropriate, migration of AIN design templates to ISDN and BISDN configurations.

Dr. Beckmann also served as the Bellcore graduate school recruiter in electrical engineering and computer science at the University of Southern California (Los Angeles).

From: 1980
To: 1984
Organization: Bell Laboratories
Title: Manager (1983-1984) and Member of Technical Staff (1980-1983)
Summary: During his time at Bell Labs, Dr. Beckmann was responsible for:

- Queuing theoretical analysis and algorithmic development for automatic call distribution systems
- System design and development (as the lead systems engineer) of a Fast Packet Switching system that digitized and packetized voice and multiplexed and switched voice and data traffic (predecessor of ATM technology)
- Creation and management of a group responsible for systems integration of packet-switched data networks with voice networks

William H. Beckmann, Ph.D.
Curriculum Vitae

From: 1982
To: 1982
Organization: Rensselaer Polytechnic Institute
Title: Adjunct Professor of Telecommunications Engineering

From: 1979
To: 1980
Organization: Middlebury College
Title: Assistant Professor of Mathematics and Computer Science and Mellon Fellow

From: 1977
To: 1979
Organization: Middlebury College
Title: Assistant Professor and Mellon Fellow

From: 1978
To: 1978
Organization: Harvard Medical School
Title: Adjunct Professor of Mathematics in the Medical Sciences

From: 1976
To: 1977
Organization: Cornell University
Title: Instructor in Mathematics

From: 1972
To: 1976
Organization: Cornell University
Title: National Science Foundation Graduate Fellow

Consulting Experience

From: 2006
To: 2006

William H. Beckmann, Ph.D.
Curriculum Vitae

Organization: Steptoe & Johnson
Summary: Provided technical consulting in Vonage v. Verizon

From: 1999
To: 1999
Organization: Federal Communications Commission
Summary: Technology and Business consulting on Broadband and Wireless systems

From: 1995
To: 1996
Organization: British Telecom
Summary: Business and technical consulting on engineering and deployment of ADSL and fiber systems, including switching and transmission facilities and information technology, and the underlying network management infrastructure

From: 1992
To: 1993
Organization: Ameritech Development Corporation
Summary: Provided technical and business due diligence analysis and report regarding ADSL and Amati Communications

Litigation Support Experience

Expert Engagement:

Type of Matter: Trade Secrets
Law Firm: McGrane Greenfield LLP
Case Name: Jasmine Networks, Inc. v. Sehat Sutardga, Marvell Semiconductor, Inc.
Services Provided: Expert Witness
Disposition: Ongoing
Date: 2007 -

Expert Engagement:

Type of Matter: Patent Infringement
Law Firm: Bingham McCutchen and Heller Ehrman LLP
Case Name: Inline Connection Corporation v. EarthLink, Inc.
Services Provided: Research; Expert Report; Testified at deposition and trial.

William H. Beckmann, Ph.D.
Curriculum Vitae

Disposition: Concluded
Date: 2005-2007

Expert Engagement:

Type of Matter: Patent Infringement
Law Firm: Heller Ehrman LLP
Case Name: Inline Connection Corporation v. CONTEL of the South Inc., GTE Southwest Inc., GTE.NET LLC, Telesector Resources Group, Inc., Verizon Internet Services, Inc. et al
Services Provided: Retained. Research. Case is on hold. Telecommunications\Networking Technology
Disposition: Continued pending outcome of Inline Connection Corporation v. EarthLink, Inc. above
Date: 2005-Present

Expert Engagement:

Type of Matter: Patent Infringement
Law Firm: Steptoe & Johnson
Case Name: USA Video Technology Corp. (US Video On Demand) v. MovieLink (partners: WB, Paramount, MGM, Universal Studios, Sony Pictures)
Services Provided: Research; Expert Report; Deposition
Disposition: Settled
Date: 2004 - 2005

Professional Affiliations

- Member, AMS (American Mathematical Society)
- Member, MAA (Mathematical Association of America)
- Member, AAAS (American Association for the Advancement of Science)
- Member, IEEE (Institute of Electrical and Electronics Engineers)
- Member, ACM (Association of Computing Machinery)

Patents & Publications

<u>Patent</u>	<u>Date Issued</u>	<u>Description</u>
6,675,388	2004	Data distribution system using coordinated analog and digital streams.

William H. Beckmann, Ph.D.
Curriculum Vitae

Presentations

Related to xDSL Technology

1. Panel Member, IEEE Conference on Digital Subscriber Line (DSL) Technologies, San Jose (1992)
2. "Asymmetric Switching Requirements in Digital Switching Systems Generated by ADSL Deployment," invited address at AT&T Conference on Advanced Switching System Technologies, Chicago (1991)
3. "Issues in Preparing for ADSL and HDSL Implementation," talk presented to Regional Bell Operating Company (RBOC) engineers, Chicago (September 1989)
4. "Impact of Digital Processing Requirements for ADSL Deployment in the Intelligent Network," talk presented to Bellcore (September 1988)

Related to General Broadband Technologies and Voice/Data Integration Technologies

1. "Comparison of High Definition Video Alternatives within IP Networks," Joint presentation with Dr. Michael Haley to IETF reviewing Internet-2 (1997)
2. "Management and Operations in a Network Supporting Voice, Data, and Video," Presentation to STET and Telecom Italia, Rome (1996)
3. "FDDI and ATM Network Comparisons and Interfaces," Invited Presentation to Digital Equipment Corporation, Boston (1990)
4. Keynote Address on Digital communications systems and applications at the IEEE International Conference on Digital Communications, Stuttgart (1988)
5. Presentation on "Digital Broadband Networks and Multimedia Applications" at International ISDN Conference in London (1987)
6. "Recommendation for Protocol Headers in Voice Packets," Presentation to Study Group XVIII, CCITT, Geneva (September 1983)
7. "Transport of Voice Streams in an X.25 Network," Presentation to JWG (Study Group VII/XI), CCITT, Washington (June 1983)

Articles and Memoranda

1. "Business and Technical Analysis of Proposed Ethernet Network and IEEE 802.6 Extensions through a WAN," consulting memo for Lucent Technologies (November 1999)
2. "Decisions, Decisions: Digital data broadcasting can provide new revenue streams for telcos, cable companies and DBS service providers," *Telephony* (October 1997)
3. "Online Data Base Systems Using Broadband Networks to Displace Storage Devices," Joint technical memorandum (IBM) with Dr. Ahmed Tantawy (1996)
4. "Stochastic Comparison of Trellis Encoding Parameters," Technical Memorandum (written at Bell Labs, published in Bellcore) (1985)

William H. Beckmann, Ph.D.
Curriculum Vitae

-
5. "Performance Analysis of Alternatives in Interconnection of Optical Core Switching Matrices," Technical Memorandum, Bell Telephone Laboratories (1983)
 6. "Modifying Banyan Switches to Emulate StarLite Switching Functionality," Technical Memorandum, Bell Telephone Laboratories (1982)
 7. "High Density Wave Division Multiplexing in Optical Fiber Transmission and Switching Systems: A Mathematical Model," Technical Memorandum, Bell Telephone Laboratories (1982)
 8. "Burst Switching and Jitter in Packetized Voice," Technical Memorandum, Bell Telephone Laboratories (1982)
 9. "A Mathematical Model for Discrete Embedding and Extraction of Waveforms," Technical Memorandum (Bell Telephone Laboratories), 1982
 10. "Buffer Caching Requirements in a Packetized Voice Network," Technical Memorandum, Bell Telephone Laboratories (1981)
 11. "Synchronizing Packet Streams over a Multi-Routing Packet Network," Technical Memorandum, Bell Telephone Laboratories (1981)

Other

1. Co-host, IEEE Globecom "Communications for the Information Age," Hollywood, FL (1988)

EXHIBIT 2

REDACTED
IN ITS ENTIRETY